IMMATURE STAGES OF BAJULATA BAJULA GODING (MEMBRACIDAE, HEMOPTERA).

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The genus *Bajulata* was erected by Ball in 1933 to accommodate a single species, *bajula* Goding. This species has had a rather varied taxonomic career. It was described by Goding in 1894 in the genus *Evashmeadea;* was transferred by Van Duzee in 1908 to the genus *Vanduzea;* then finally made the type of the genus *Bajulata* by Ball. The genus has remained monotypic.

Bajulata bajula was originally described from Arizona and is one of the commonest, best known and most widely distributed of the Membracidae in the south-west. However, nothing has ever been reported regarding its life history or its host plants.

In the spring of 1942 the writer was able to collect large numbers of these insects in the vicinity of Tucson, Arizona, and during the month of April found the nymphs of all five instars.

The best collecting ground for this species was the Saguaro National Monument about 17 miles east of Tucson. This area is a great cactus forest of over 63,000 acres which covers an undulating portion of the desert and contains probably the greatest stand of saguaro in the world. A number of small ravines support a considerable growth of palo verde, creosote, mesquite, mimosa and other shrubs in addition to the various cacti. The host plant for *B. bajula* was mesquite (*Prosopis juliflora*) and on this plant were found the egg-slits, all of the nymphal instars and the adults.

The egg-slits were in the young green stems, were lenticular in shape, averaging 7 millimeters in length and 1.5 millimeters in maximum width and were arranged spirally around the twig much in the fashion of the genus *Ceresa.*

The fact that all of the nymphal instars were to be found at the same time indicates that this membracid, like many other species of the family, has a long period of oviposition so that the eggs hatch and the immature stages appear over a considerable period of time. The nymphs were attended by two species of small black ants. Dr. M. R. Smith has determined one of these ants as *Solenopsis xyleni* and the other as *Crematogaster* sp. of the *opaca* Mayr group.

The technical descriptions of the immature stages are as follows:

First Instar

Measurements: Length 2.8 mm.; maximum width 0.8 mm.

White, with broad head and brownish lateral band; dorsal surface bearing spines.

Head reddish-brown, broad, flat, roughly sculptured; dorsal margin serrate; eyes prominent, deep red; ocelli small, reddish; antennae colorless, well developed; clypeus reddish, beak long.

Prothorax white, well formed, dorsal margin serrate with six small teeth; mesothorax white, faint lateral patch of brownish; dorsal margin with five small teeth; mesothorax white with lateral area tinged with brown, dorsal margin with four small teeth.

Abdomen with seven visible segments; all segments white with faint lateral band of brown; the first six segments each bearing a single dorsal spine; seventh segment long, tubular, weakly serrate above, ending in the anal tube.

Undersurface white; legs white and much flattened; tibiae weakly spined.

Second Instar

Measurements: Length 3.3 mm.; maximum width 1.4 mm.

Pale greenish-white with eyes and legs brownish; dorsal margin of thorax weakly and irregularly serrate; dorsal margin of abdomen spined.

Head pale green, flat, dorsal margin strongly convex, inferior margin straight; eyes reddish-brown; antennae brownish, well developed; ocelli small, colorless; clypeus small, flat, not projecting below inferior margins of genae.

Prothorax heavy, greenish, dorsal margin strongly convex and irregularly serrate; mesothorax greenish, dorsal margin weakly serrate; wing pads beginning to appear; metathorax greenish, dorsal margin convex, wing pads faintly indicated.

Abdomen greenish without markings; seven segments well developed; first six segments bearing dorsal spines; last segment tubular and protruded.

Undersurface greenish-brown; legs brown and much flattened; tibiae weakly spined.

Third Instar

Measurements: Length 5 mm.; maximum width 2 mm.

Greenish-brown; robust; dorsal spines reduced; pronotum well developed and beginning to overlap the dorsal margin of the mesonotum.

Head mottled brown and white; twice as broad as high; dorsal margin weakly sinuate; inferior margin straight; eyes very large, brown; ocelli large, reddish-brown; antennae weak.

Prothorax brown. Pronotum strongly developed, dorsal margin convex and extending backward over part of meso-

notum, inferior margin sharply pointed; mesothorax broad, wing pads well developed; metathorax broad, dorsal margin smooth, wing pads very distinct.

Abdomen dark grayish-brown; dorsal spines reduced; first six segments uniform in structure; seventh segment produced and extended to form the anal tube.

Undersurface grayish-brown; legs only slightly flattened; femora gray-green; tibiae brown and edged with spines.

Fourth Instar

Measurements: Length 6.5 mm.; maximum width 2.8 mm.

Brown, speckled with white; pronotum covering half of mesonotum; anal tube distinctly upraised; wing pads large and set off from thoracic segments.

Head quadrangular, twice as broad as high, brown with white fascia; eyes very large, reddish-brown with white borders; antennae short, black; ocelli small, inconspicuous, amber-colored.

Prothorax brown and strongly developed; pronotum covering half of dorsal surface of mesonotum; mesothorax wide with front wing pads large, distinct and black; metathorax wide with wing pads well developed.

Abdominal segments weakly produced above, smooth below; anal tube very large and strongly turned upward; uniformly brown, speckled with white.

Undersurface light brown; legs grayish-brown, not flattened; tibiae pilose; tarsi well developed.

Fifth Instar

Measurements: Length 7 mm.; maximum width 3 mm.

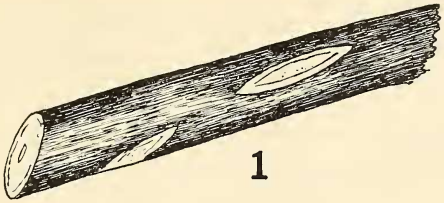
Dark brown with white spots; pronotum covering most of mesonotum; wing pads very large; seven abdominal segments distinct; anal tube long and straight.

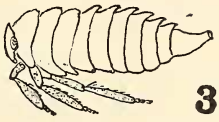
Head quadrangular, twice as broad as long, brown with horizontal white bands; base arcuate; lower margin straight; eyes very large, brown; ocelli small, white; antennae minute; clypeus very small, triangular.

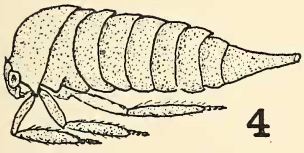
Prothorax brown with white spots; pronotum convex, covering most of mesonotum; metanotum broad; wing pads on both mesothorax and metathorax well developed.

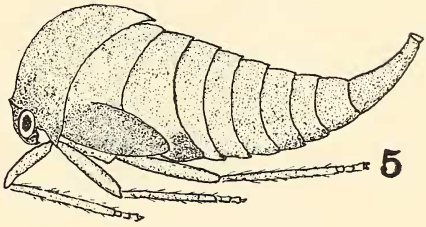
Abdomen brown mottled with white, showing seven abdominal segments in addition to the long, straight, somewhat flattened anal tube; no dorsal spines; anal tube pilose.

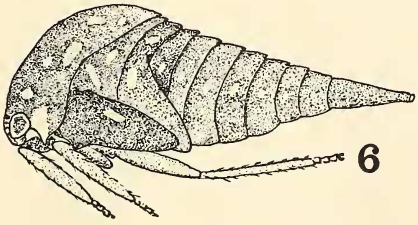
Undersurface brown; legs light brown; tibiae flattened and pilose; tarsi gray-brown with claws well developed.











Explanation of Figures.

Fig. 1. Egg-slits.
Fig. 2. First instar.
Fig. 3. Second instar.
Fig. 4. Third instar.
Fig. 5. Fourth instar.
Fig. 6. Fifth instar.